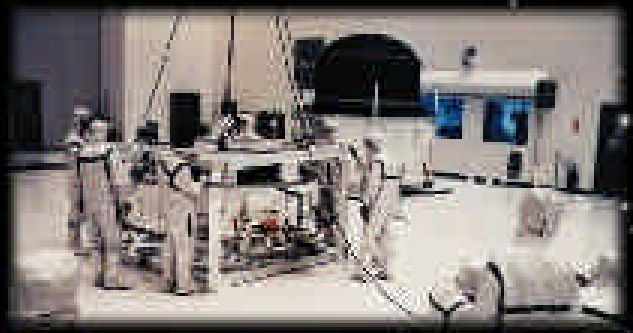
Public

Astronauts and Pilots

Mission Success Starts With Safety

NASA

http://www.hq.nasa.gov/safety



NASA Workforce

High-Value Equipment and Property

The Annual NASA Safety Directors' Consultation

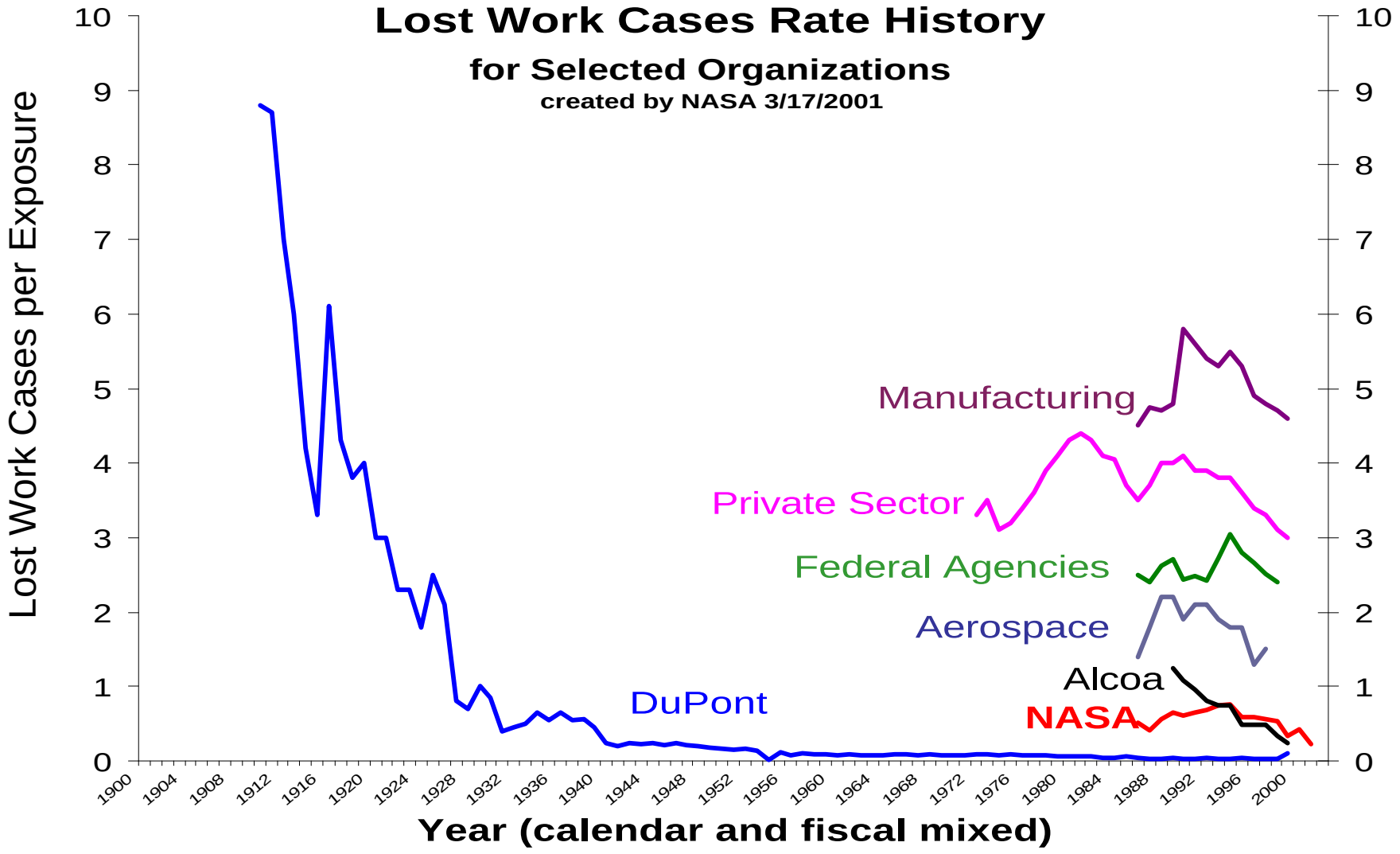
Hosted at Agency Headquarters

March 20-23, 2001

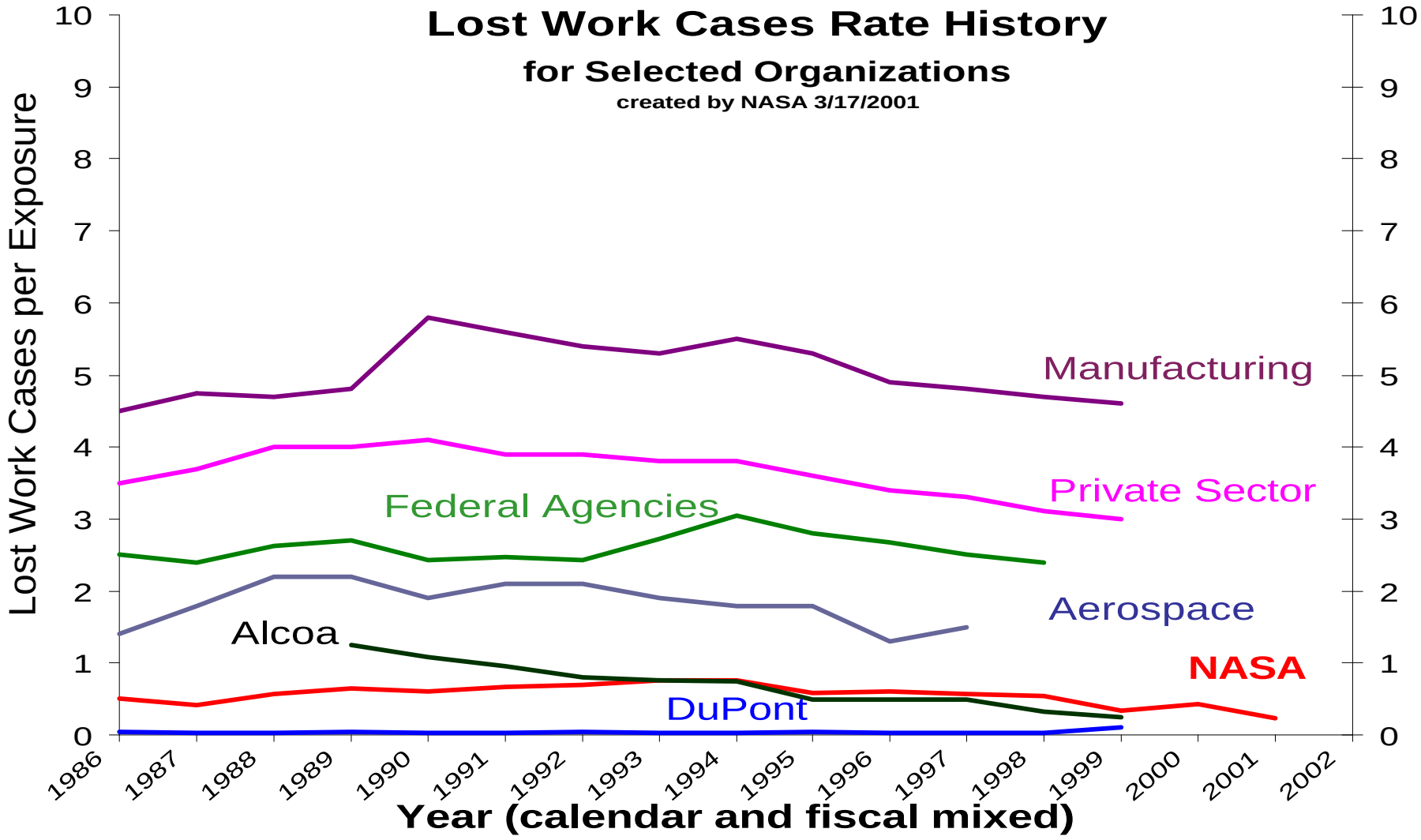
James Lloyd
Director, Safety and Risk Management Division
Office of Safety and Mission Assurance

Protecting the Public, Astronauts and Pilots, the NASA Workforce, and High-Value Equipment and Property

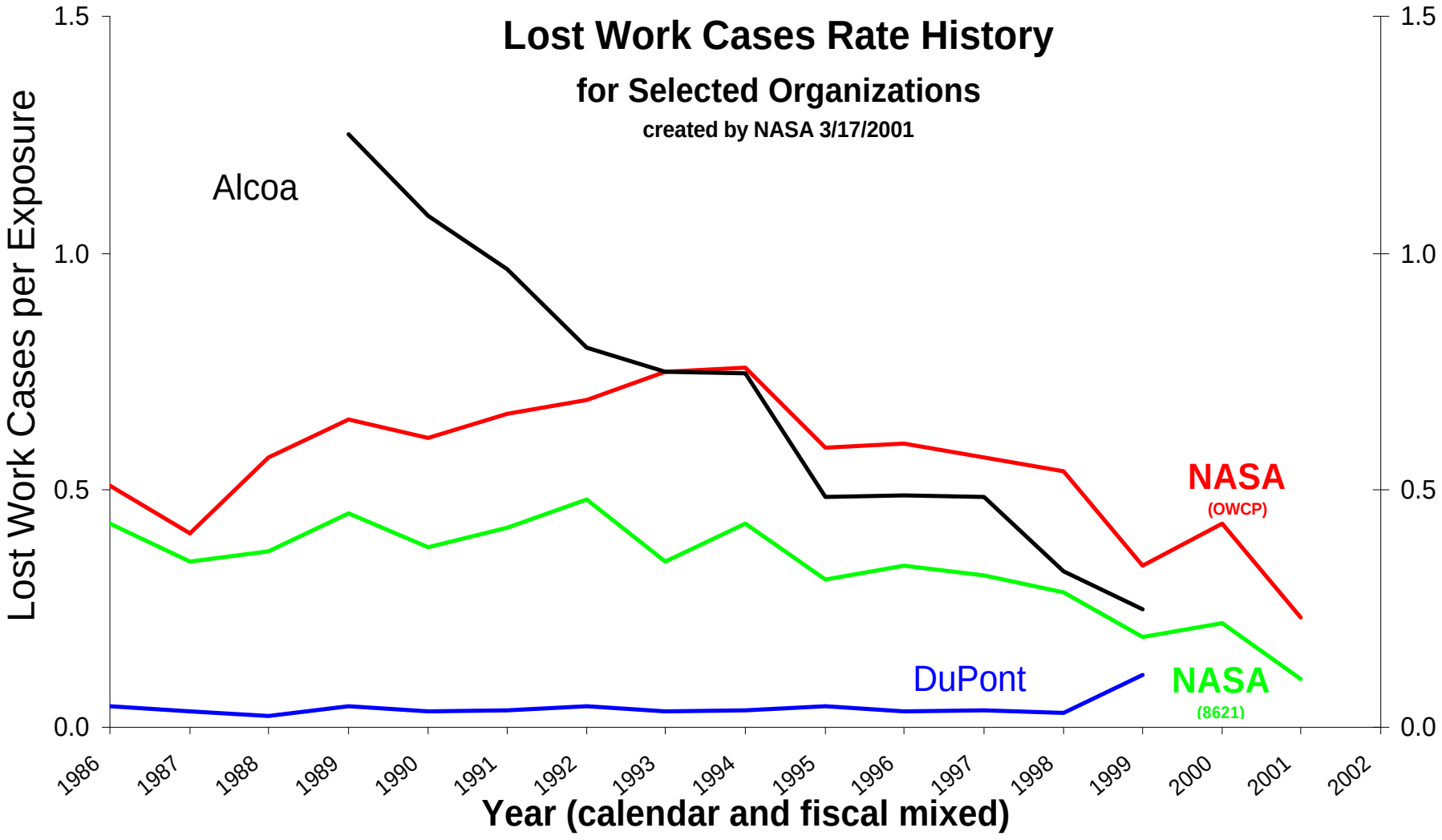
Lost Time Injury Rate Comparison



Lost Time Injury Rate Comparison



Lost Time Injury Rate Comparison



Performance Against Goals First Two Years

Fiscal Year	Goal	Achieved	Incidents
99	0.26	0.19 (0.61)	33 (104)
00	0.20	0.22 (0.60)	37 (102)

Lost Time Injury Rate --

Work Incidents per 200000 hours worked

(Total incidents of cases with injury)

Purpose of Meeting

- **Discuss the state of NASA's safety program.**
- **Listen to the approaches used by each Center to formulate better programs.**
- **Discuss adjustments to the approaches being taken**
- **Prepare the course of action for the future as a result of the weeks' discussion.**

And,

Generate discussion and feedback on any additional strategic efforts needed to make the mishap prevention program more effective.

NASA Basic Safety Program Policy

NPD 8710.2B

- **Prevent:**
  - Loss of life
  - Personnel injury or illness
  - Equipment or property damage or loss
  - Environmental harm
  - Events that could cause adverse public reaction
- **Early and systematically review process and product for hazards and address carefully all waivers and deviations to established safety requirements.**
  - Identify and control hazards.
  - Apprise management of residual risk.
- **Encourage participation in identifying and reporting of hazards in the workplaces or product.**
- **Seek lessons learned as a result of mishaps and "close calls."**

NASA Safety (and Health) Program Tenets and General Philosophy

- **Successful execution of the injury and illness prevention program and protection of employees is the responsibility of line management down to supervisory level.**
  - Compliance responsibility is vested with line management
  - All employees are responsible for safety of their own actions.
- **Effectiveness of program dependent on:**
  - Management's desire and commitment to accomplish objectives safely.
  - Employees' dedication for performing assigned tasks safely IAW well developed, safe procedures.
- **All tasks, even risky ones, can be performed safely:**
  - Understanding the risks and risk mitigation.
  - Control of configuration and elimination/control of risk (risk management).
  - Lessons Learned and continuous improvement.
  - Independent assessment.

Historical Perspective

Protecting the Public, Astronauts and Pilots, the NASA Workforce, and High-Value Equipment and Property

ASI Seminal Requirement (early FY 1998)

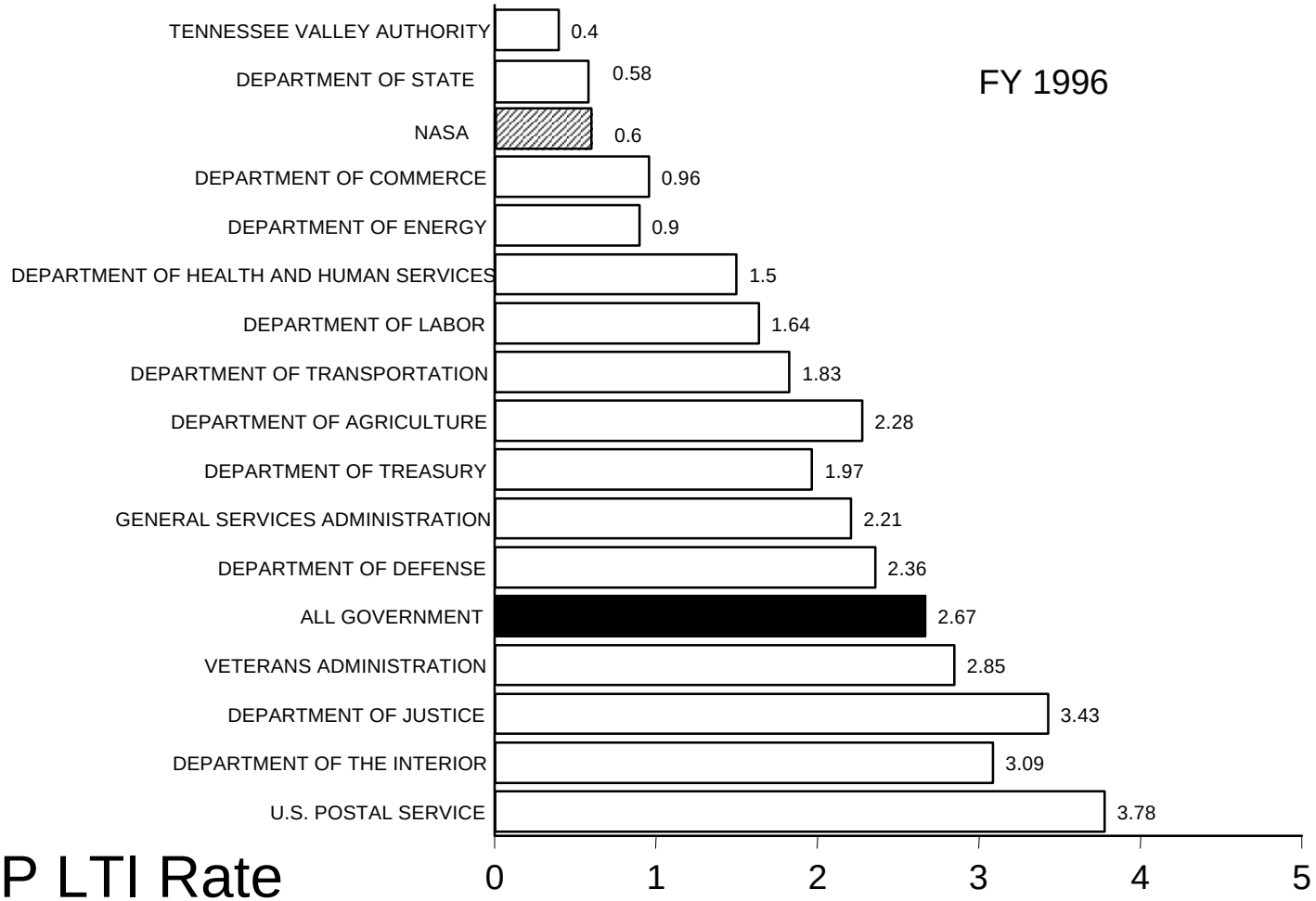
Administrator Dan Goldin -

"Implement the DuPont safety training program for NASA"

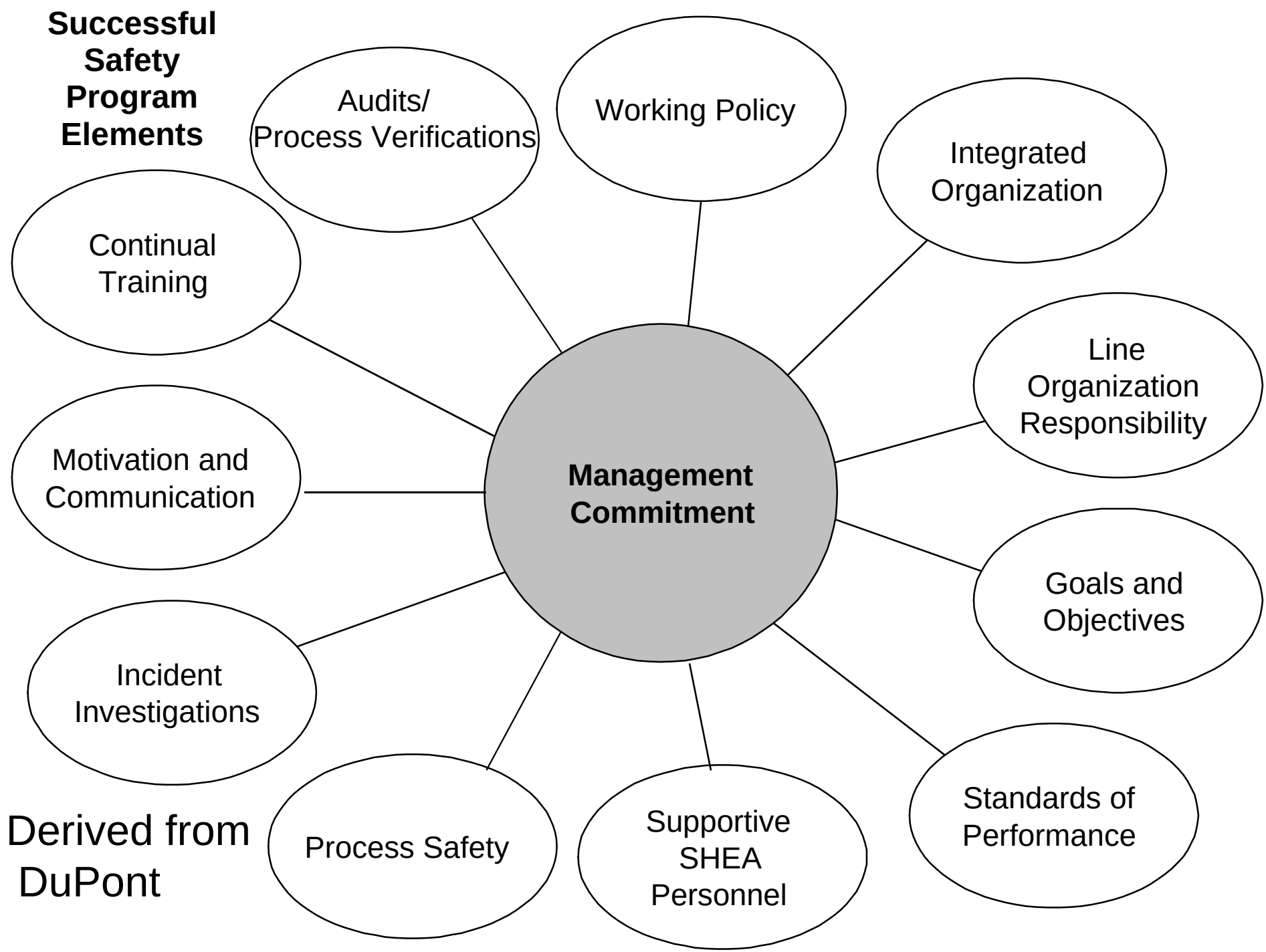
(following a discussion of the efforts at JSC, KSC, and USA, Inc. at the Human Enterprise and Development of Space (HEDS) Assurance Board, 09/09/97)

The first year's direction

LOST TIME INJURY/ILLNESS RATES IN SELECTED FEDERAL AGENCIES*



OWCP LTI Rate


Successful Safety Program Elements
Audits/ Process Verifications
Working Policy
Integrated Organization
Continual Training
Line Organization Responsibility
Motivation and Communication
Management Commitment
Goals and Objectives
Incident Investigations
Standards of Performance
Process Safety
Supportive SHEA Personnel
Derived from DuPont

Discussion within safety community of needs

- **An Administrators' Policy letter/statement with specified goals and objectives.**
  - **After executive session with industry leader.**
  - **Center Directors' performance requirements.**
- **Continue to work the policy and standards for safety.**
- **Re-stimulate the reporting and analysis for corrective action of "close-calls."**
- **Revitalize/reestablish a NASA safety awards program.**
- **Follow through with central development of NASA- unique safety training coursework (PDI).**
- **Code QS continue to stress the process of mishap reduction through process verification.**

(from 1998 safety meeting discussion (at LaRC))

How it actually evolved!

ASI - Chronology

- **Sep 97: Mr. Goldin participated in HEDS Assurance Board -- KSC and JSC were reporting adoption of DuPont safety program features; Mr. Goldin asked that we do it NASA-wide.**
- **Sep 97: Jon Mullin met with DuPont at JSC to begin to lay a foundation for implementation.**
- **Sep 97: Coincidentally Code QS staff met with National Safety Council representative to discuss their capability to support a DuPont-like program.**
- **Oct 97: Jim Lloyd briefed General Dailey; action: present plan for a training effort to CIC.**
- **Dec 97: Jim Lloyd briefed SMA Directors at SSC, benchmarking DuPont against NASA safety program.**
- **Feb 98: draft concept presented at Safety Directors' meeting -- some concern expressed about NASA locking into DuPont implementation philosophy.**
- **6 Apr 98: Mr. Goldin delivered safety message/direction at Senior Management Council (SMC) based on Code Q talking points.**
- **9 Apr 98: training effort and metrics discussed briefly at Occupational Health and Safety Executive Board (OHSEB).**

ASI - Chronology (Continued)

- **<u>27 April 98:</u> Mr. Goldin delivered safety message/direction at SMC, including action to Code Q: *"recommend a course of action with the goal of establishing NASA as number one in safety in the nation."***
- **<u>27 May 98:</u> Initial "Course of Action Plan for Establishing NASA as the Nation's Leader in Safety" delivered to Mr. Goldin.**
- **<u>10 Jun 98:</u> Mr. Goldin again participated in HEDS Assurance Board; he stressed:**
  - Close call reporting--incentives and no reprisal
  - Safety awards--high visibility and cash
  - Metrics--uniform set of SR&Q metrics; 1st time quality is fundamental
  - VPP--NASA-wide Star certification
  - Tools of the Future--virtual testbeds for operational safety
  - DuPont-like safety training/philosophy
  - Human factors--predictive models, etc.
  - Certification of field representatives
  - Clear delegations of authority
- **<u>22 Jun 98:</u> Mr. Goldin tasked AAs and Center Directors to submit 1-2 pages of ideas on how to make NASA number one in safety in nation--due to Code Q, 10 July 98.**
  - He said: *"talk to your employees, contractors, and private contacts to foster a complete partnership effort for the best possible submission."*

ASI - Chronology (Continued)

- 24 Jun 98: SMA Directors' Meeting - Technical Working Group's proposed to address implementation of parts of the ASI.
- 31 Jul 98: Revised "Course of Action Plan for Establishing NASA as the Nation's Leader in Safety" delivered to Mr. Goldin and to General Dailey
- 10 Aug 98: Administrator indicated the plan is "mostly mayonnaise" and that he wanted more "chicken" to make a good "chicken salad."
- Mid Aug 98: Code QS strategized with center counterparts on how to put more "chicken" in the salad.
- 9 Sep 98: At Senior Staff Meeting, Administrator reported he had reviewed the "course of action" plan. "There were a lot of process recommendations, but little on specific content." He requested that AA, OSMA focus on content with the AAs and Center Directors.
- 22 Sep 98: Letter to Center Directors and Enterprise AAs requesting self-evaluation and results by 15 November 1998
- 13 Oct 98: Administrative Issues Council briefed on ASI content
- 8 Oct 98: SMA Directors' Meeting, GSFC, some actions assigned.
- 27 Oct 98: LaRC announced as accepted into VPP

ASI - Chronology (Continued)

- **15 Nov 98:** Self-evaluation reports received and compiled.
- **17 Dec 98:** Mr. Goldin briefed on Agency Safety Initiative Action Plan and accepts it as good.
- **23 Dec 98:** Letter to Enterprise and functional office AAs about the ASI and requesting comment/concurrence.
- **19 Jan 99:** "21st Century" Safety Message
  - http://www.hq.nasa.gov/hq/standalone/mshouse/page_183.html

February 26, 1999!

Senior Management Council Rollout

NASA HQ
Washington DC

Expectation and Goal

Expectation: Zero mishaps in the NASA workplace.

This expectation will result in higher levels of quality in our product and a greater degree of mission success,

And will place NASA as the nation's LEADER in the safety and occupational health of our work force and the safety of the products and services we provide"

What and where is the NASA workplace?

The Agency safety and health program

... is applied throughout the NASA workplace in or on:

- **Earth**
- **Low Earth Orbit**
- **Troposphere/Stratosphere**
- **Deep Space**

World Class Safety & Health Program

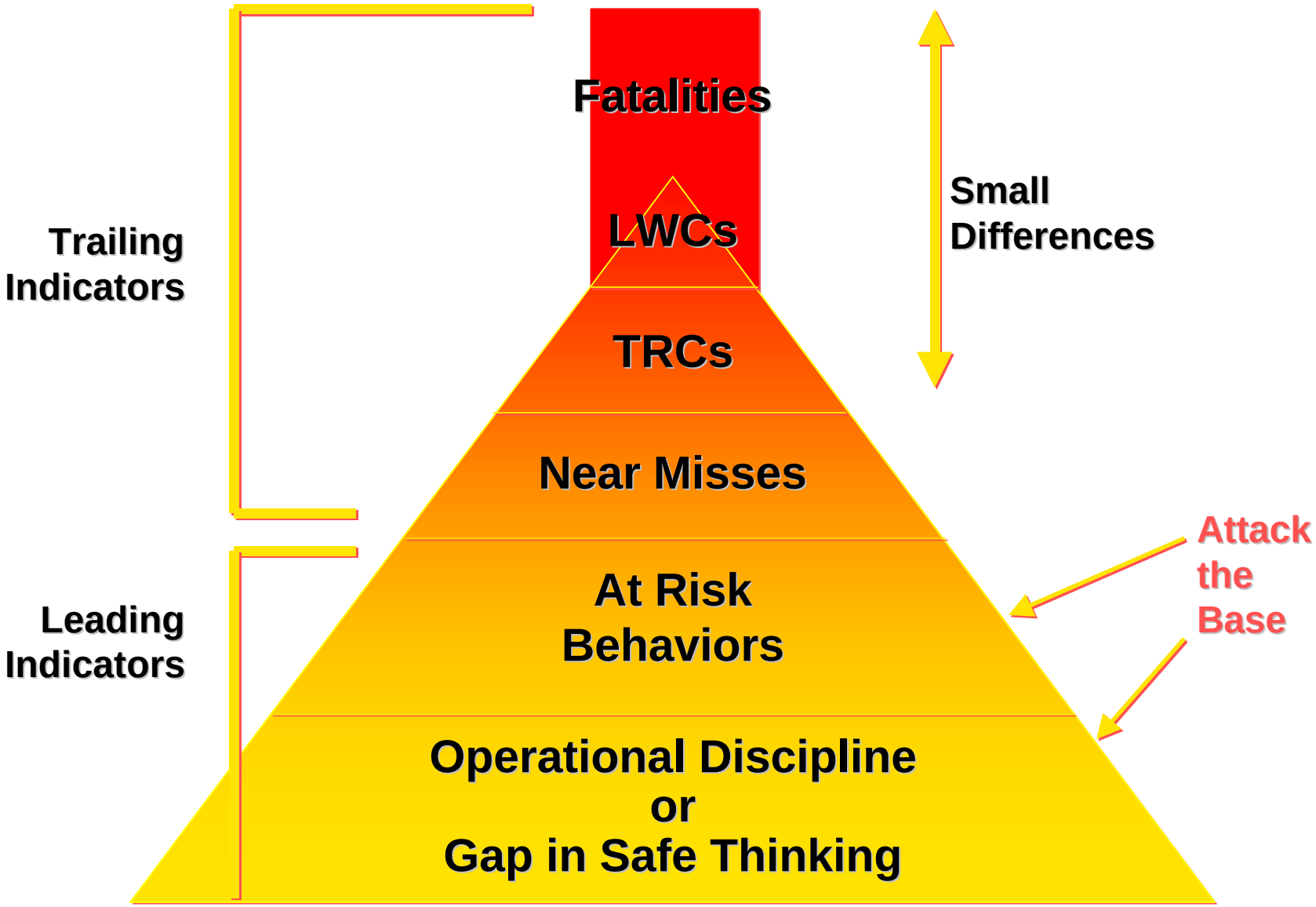
Core Process Requirements (CPRs):

CPR 1 Management commitment and employee involvement

CPR 2 System and worksite hazard analysis

CPR 3 Hazard prevention and control

CPR 4 Safety and health training for all employees


Fatalities
LWCs
TRCs
Near Misses
At Risk
Behaviors
Operational Discipline
or
Gap in Safe Thinking
Small
Differences
Trailing
Indicators
Leading
Indicators
Attack
the
Base

Evaluation and Correction of the Safety Program Gaps

Considered key to the improvement of the NASA safety and health program

September

1998

CHECK LIST

SAFETY & HEALTH PROGRAM CORE REQUIREMENT

Report of Self-Evaluation

	Fulfilled? *Yes/No:*	**CAP *** *Yes/No:*	**Metric** *Yes/No:*
1) Management Commitment & Employee Involvement:			
(i) Worksite Policy Documentation			
(ii) Clear Goal Established & Communicated			
(iii) Full Management Involvement in Implementation			
(iv) Full Employee Involvement in Safety Program			
(v) Assigned/Communicated Responsibilities			
(vi) Authority and Resources Provided			
(vii) Professional Safety and Health Staff			
(viii) Center Staff Held Accountable			
(ix) Annual Reviews Conducted			
2) Worksite Hazard Analysis:			
(i) Baseline Surveys Completed and Updated			
(ii) Analysis Performed for New Work			
(iii) Hazard Analyses Performed for All Jobs			
(iv) Safety & Health Inspections Occur Regularly			
(v) Hazard Reporting System in Place			
(vi) All Mishap/ “Close Calls” Investigated and Hazards Corrected			
(vii) All Injury, Illness, “Close Call” Trend Data Analyzed			
3) Hazard Prevention & Control:			
(i) Hazard Id. Processes & Measurements Established			
(ii) Facility & Equipment Maintenance Conducted			
(iii) Emergency Prep. Planning & Training Conducted			
(iv) Emergency Medical Care Program Established			
4) Safety & Health Training:			
(i) Employees Trained to Id, Understand & Prevent Hazards			
(ii) Supervisors Trained to Control Hazards			
(iii) Managers Trained to Understand Safety & Health Issues			

* Corrective Action Plan

Checklist Instructions:

- Each box should be filled with a **Y** (for Yes) or **N** (for No)
- For every box filled with a **Y** (for Yes), supporting documentation or examples should be attached as evidence
- Completed Checklists with supporting documentation should be submitted to **Code QS at NASA HQ** by 9/15/98.

Center Director's Self-Evaluation -- the initial step

Data displayed as percentage or percentage points

		Fulfilled	CAP	Metric
1)	**Management Commitment & Employee Involvement:**	**76%**	**75%**	**46%**
(i)	Worksite Policy Documentation	91	100	45
(ii)	Clear Goal Established & Communicated	77	91	55
(iii)	Full Management Involvement in Implementation	68	91	45
(iv)	Full Employee Involvement in the Safety Program	55	91	55
(v)	Assigned/Communicated Responsibilities	73	91	36
(vi)	Authority and Resources Provided	86	91	36
(vii)	Professional Safety and Health Staff	100	100	55
(viii)	Center Staff Held Accountable	*45*	82	45
(ix)	Annual Reviews Conducted	91	100	45
2)	**System & Worksite Hazard Analysis:**	**78%**	**72%**	**57%**
(i)	Baseline Surveys Completed and Updated	64	91	36
(ii)	Analysis Performed for New Work	77	91	36
(iii)	Hazard Analyses Performed for All Jobs	64	91	45
(iv)	Safety & Health Inspections Occur Regularly	95	100	64
(v)	Hazard Reporting System in Place	95	100	55
(vi)	All Mishap/ "Close Calls" Investigated and Hazards Corrected	77	91	91
(vii)	All Injury, Illness, "Close Call" Trend Data Analyzed	73	91	73
3)	**Hazard Prevention & Control**	**90%**	**86%**	**36%**
(i)	Hazard Id. Process & Measurements Established	91	100	27
(ii)	Facility & Equipment Maintenance Conducted	77	91	27
(iii)	Emergency Preparedness Planning & Training Conducted	91	100	55
(iv)	Emergency Medical Care Program Established	100	100	36
4)	**Safety & Health Training**	**61%**	**62%**	**39%**
(i)	Employees Trained to Identify, Understand & Prevent Hazards	64	82	45
(ii)	Supervisors Trained to Control hazards	55	82	36
(iii)	Managers Trained to Understand Safety & Health Issues	64	91	36

Second--the Performance Evaluation Profile (PEP)

The Safety PEP survey will:

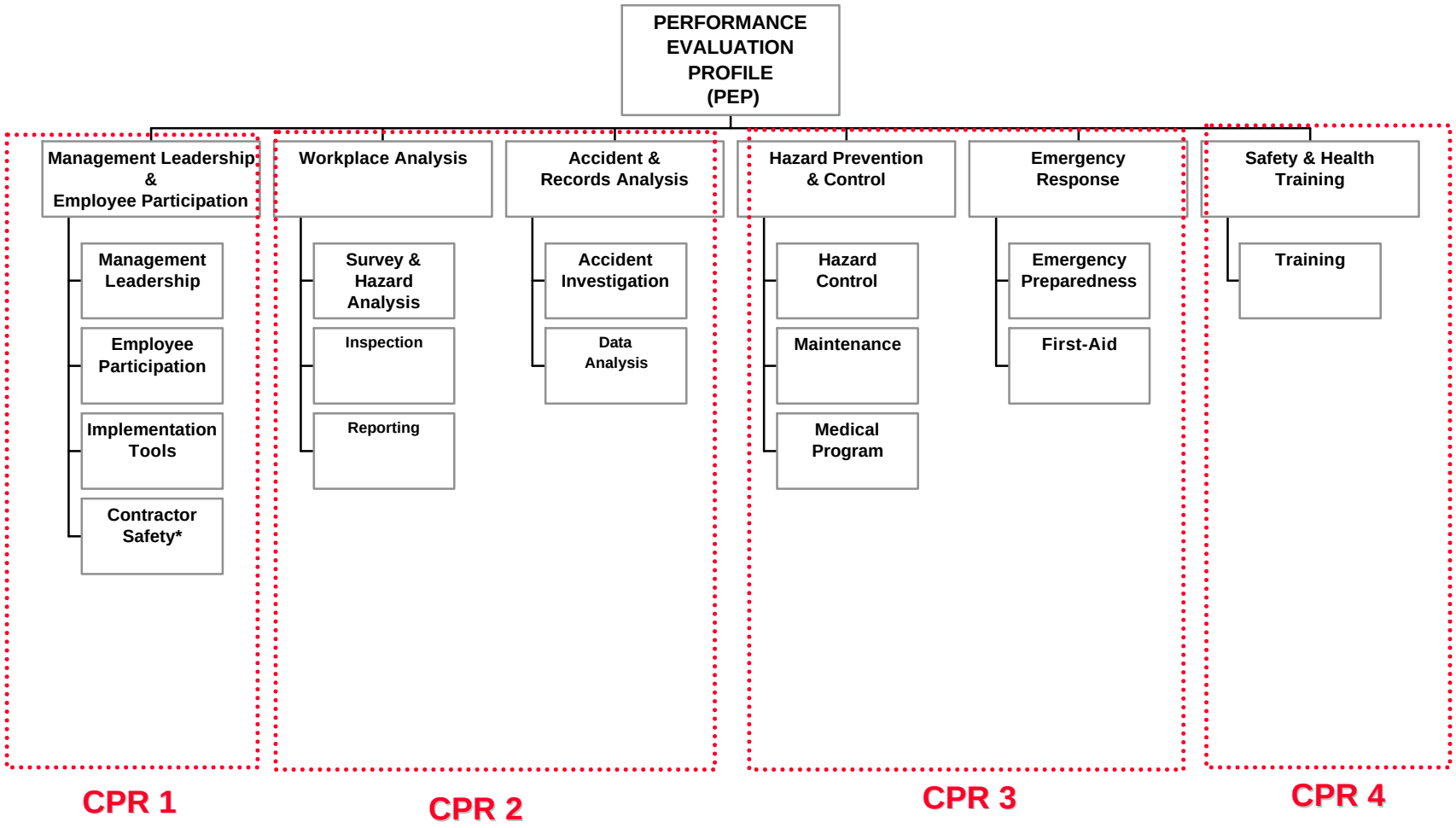
- **Provide comparative analysis of actual versus intended safety program (manager versus employee viewpoint)**
- **Uniformly evaluate safety & health programs consistent with OSHA requirements for VPP certification and NASA system safety program requirements**
- **Assess compliance with NASA & OSHA requirements**
- **Replace the existing requirements for annual safety program self-assessments with a more simplified process.**
- **Provide a road map for continuous improvement of the Safety & Health Program**
- **Provide a basis for AA and Center Director performance evaluations**

Third -- an Independent Evaluation

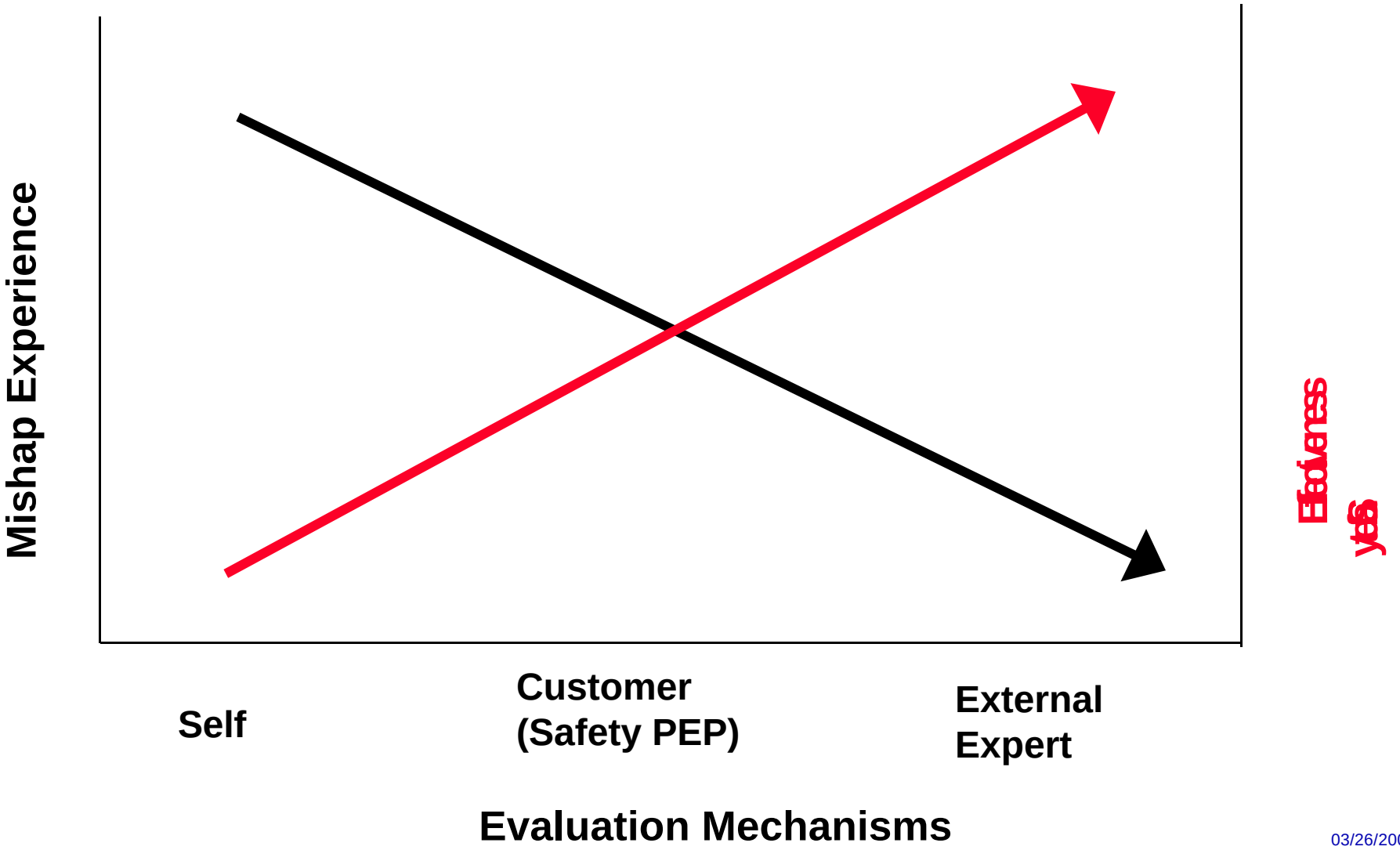
- **Third Party Evaluation is similar to ISO 9000 3rd party certification**
- **Currently the OSHA Voluntary Protection Program (VPP) is the recognized 3rd party certification for safety programs**

- **There are three levels, Star Certification is the highest**
- **To date, more than 460 private work sites have been accepted into the program. Two NASA facilities have now been accepted for Star**
  - Langley Research Center and
  - Johnson Space Center
- **Like ISO 9000, VPP has elements**
- **The 19 VPP elements are similar to the ASI elements under the four CPRs and we have drawn the traceability**

Relationship Between the PEP Elements & 4 CPRs



Safety Program Evaluation Process



Original Enterprise Performance Planning Goals

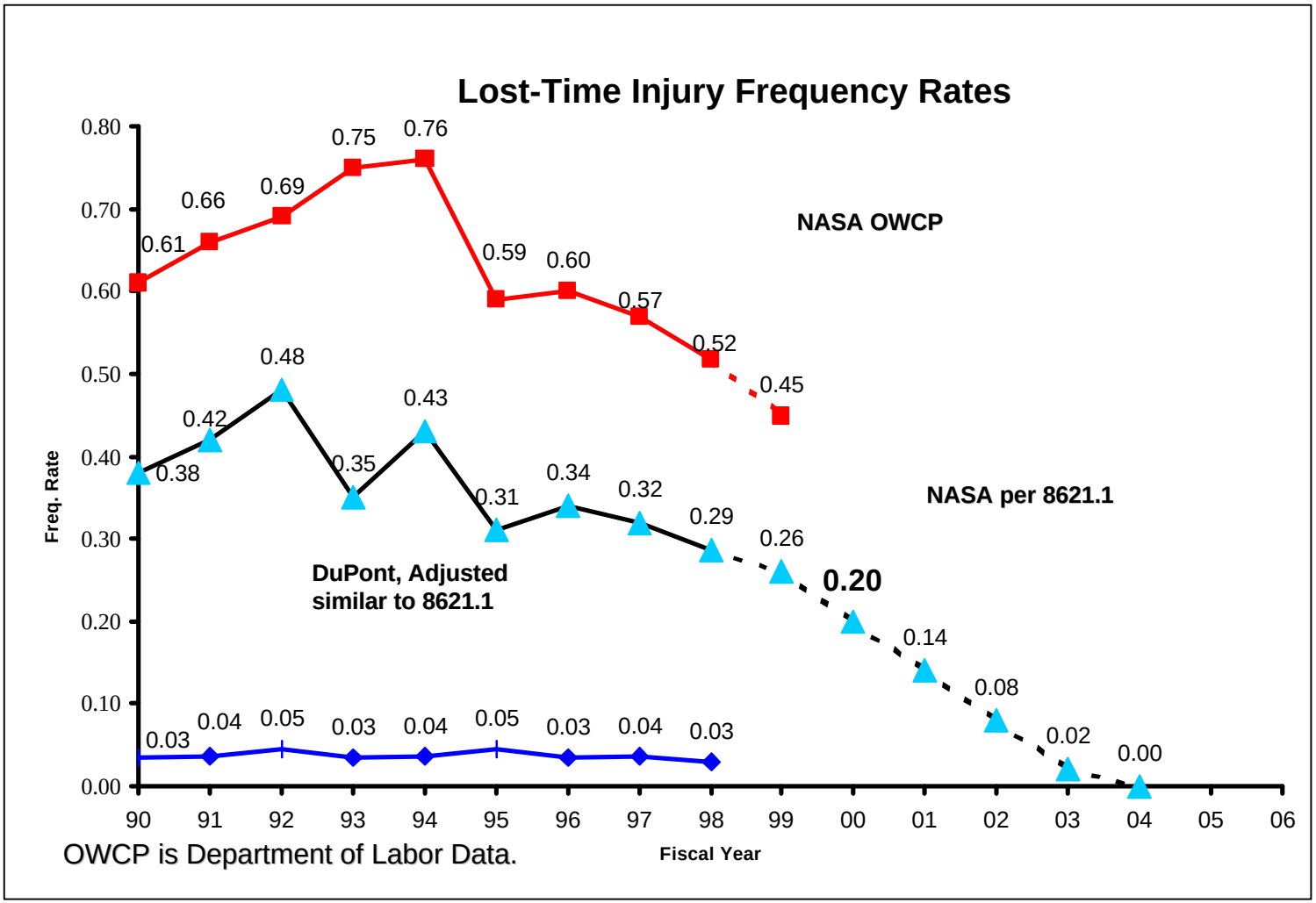
The <u>critical</u> safety element for the FY 00 performance plans for Enterprise Associate Administrators and the Associate Administrator for Headquarters Operations is twofold:

1. Meet the Agency lost-time case rate goal of 0.20 lost work case rate (number of lost work day mishaps per 200000 hours worked) for end of year FY 00 in the aggregate for the Agency.

2. Improve the Enterprise (or Headquarters) PEP score from the baseline data collected in FY 1999.

Agency Safety & Health Metrics

Presented at SMC Meeting in Feb 99



Enterprise Expectations

Enterprise Specific Safety and Health Strategy meetings (next 6 months)

- **Led by Enterprise AA and direct reports**
- **Identify and address specific issues and constraints to achieving success**
- **Address approaches for achieving Agency safety and health goals and objectives**
- **Further define and implement actions that will optimize the Initiative for the Enterprise**
- **Enterprise ASI conferences (safety & health meetings) with AA's discussing safety and health with their direct reports**
- **Appointing an Enterprise safety and health point-of-contact**
- **Follow up with Center ASI conferences with Center Directors discussing safety and health with their direct reports**

From **February 26, 1999**, NASA Senior Management Meeting on Agency Safety Initiative (ASI)

Enterprise Expectations

Annual Enterprise Safety and Health Reports

- **Performed by the Enterprise AA; given to the Administrator soon after the end of the Enterprise AA's rating period; starting this fiscal year**
- **Addresses progress against the Agency goals**
- **Includes specific actions taken to overcome problems and hurdles for achieving success**
- **Establishes the further integration of the 4 Safety and Health Core Process Requirements (CPRs) into the organization's business management processes**
- **As the ASI program matures, additional metrics will be needed to aid in making decisions that increase our chances for success and reduce costs associated with mishaps**

From **February 26, 1999**, NASA Senior Management Meeting on Agency Safety Initiative (ASI)

ASI - Chronology (Continued)

- Spring 99: Implementation of PEP delayed to July to incorporate system safety per Administrator's direction
- 22 Apr 99: Major policy speech on safety by Administrator at the Continual Improvement and Reinvention Conference, Wash, DC
- 13 May 99: Major policy speech by Administrator on HQ Safety Day
  - ftp://ftp.hq.nasa.gov/pub/pao/Goldin/1999/safetyday.txt
- late Spring 99: ASI Poster issued
  - http://www.hq.nasa.gov/office/codeq/safety/poster.htm
- 11 May 99: Senior Leadership Seminar presented by DuPont (breakout activity)
- 14 May 99: JSC announced as accepted into VPP
- 29 Jun 99: Address ASI at Occupational Health Conference in San Francisco, CA

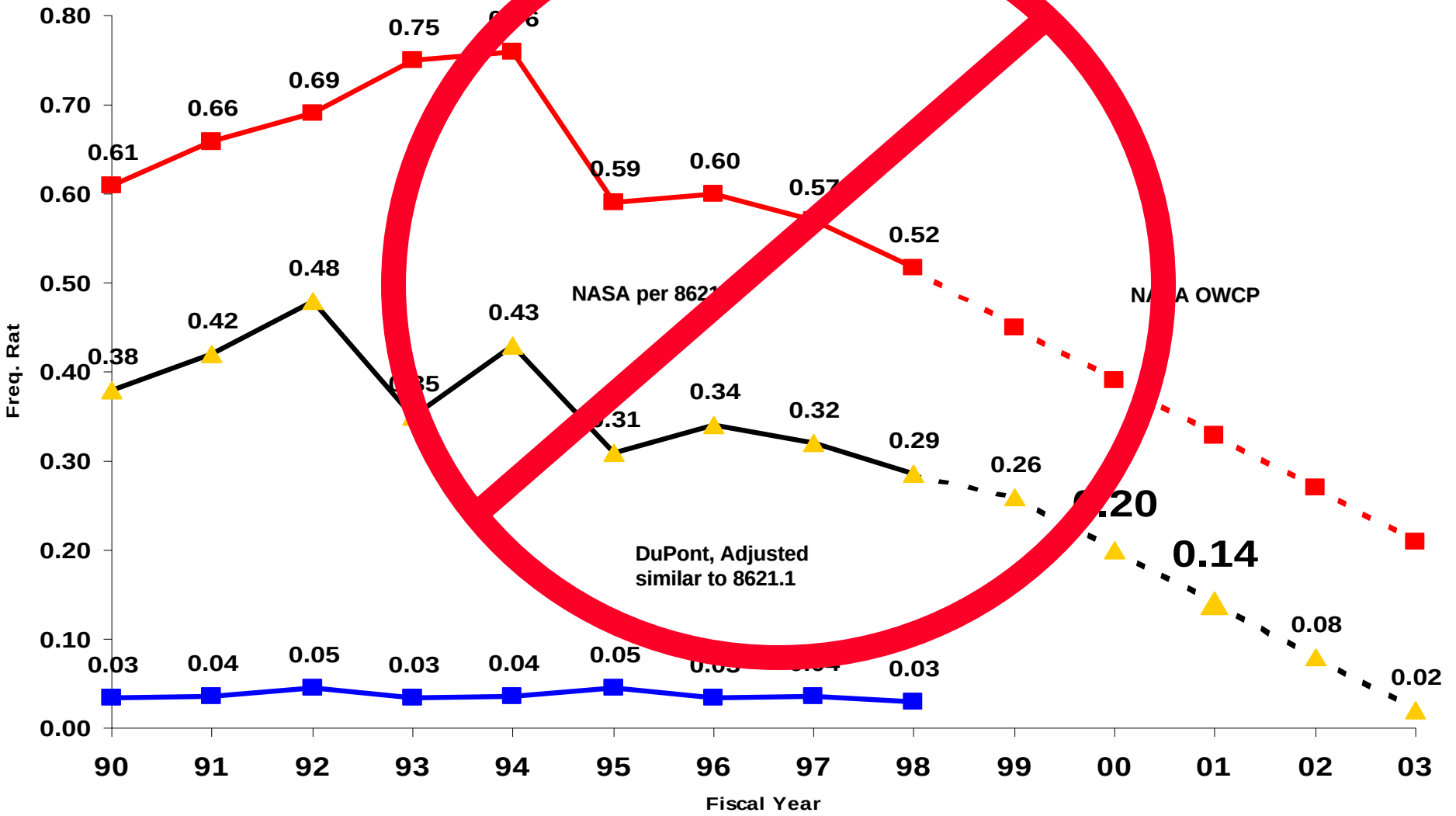
ASI - Chronology (Continued)

- 4 Aug 99: Agency Strategic Plan adjusted to include safety emphasis and adding safety as a principal Agency value
  - http://www.hq.nasa.gov/office/codez/plans/99changes.pdf
- 23 Aug 99: Safety Standards added to Performance Plans of AAs
- 29 Oct 99: Health letter issued by the Administrator -- topical discussions started at Monday SMC telecon
  - ftp://ftp.hq.nasa.gov/pub/pao/Goldin/1999/health_letter.pdf
- 29 Feb 00: Safety Directors' and Health Managers' Meeting at KSC

ASI - Chronology (Continued)

- Throughout the year all were pursuing the objectives of ASI and developing the output metrics for FY 2000
- 12 Jul 00: SMA Meeting at DFRC -- Action assigned for all to share flash info on mishaps and close calls (HQ to coordinate)
- 30 Nov 00: AA, OSMA letter to Center Directors, Reaching for Excellence in 2001-- spoke of plateau & related metrics and requested feedback by 15 Dec (Administrators' action)
- 27 Dec 00: Report to Administrator on ideas for pursuing excellence
- 5 Jan 01: Summary feedback provided electronically to Safety and SMA Directors - to "share the wealth"
- 10 Jan 01: Administrator's letter -- Safety, NASA's #1 Core Value
- 12 Jan 01: Administrator letter establishes some firm requirements -- VPP, performance planning and RBAM

FY 2000/2001 Goals



What Now?

- New safety courses nearing readiness for teaching managers, supervisors and employees
- Modifications to performance planning (employee and supervisor) prescribed
- A “date certain” (end of FY02) established for attainment of VPP Star
  - HQ plan to assist (help do readiness review) those requesting assistance
- Continue attention on behavioral factors for improving program
- A Headquarters Safety and Health Board established
- New Senior Management discussions at Monday AM meetings
- NASA Integrated Assessment Team Report (?)
- Design for Safety (?)

What Now? continued

- Continued Emphasis on system safety and reliability analytical tools
  - Knowledge and tools lacking
  - Gaps being assessed
  - Training provided
- Year end assessments of progress (performance year)
  - Involve Enterprise AAs in providing report of progress
  - Progress towards goals
    - Reduce rates
    - PEP improvement over baseline
    - Plan for achieving VPP
- No LTI Goals, except get better (except annual performance plan against the Federal Worker 2000 program)
- Open actions from original ASI Plan

Capture the Actions

At end of week we'll review the actions and plan any adjustment needed to achieve the goal.

We know it can be done!!!

Any questions, comments or feedback before we get started?

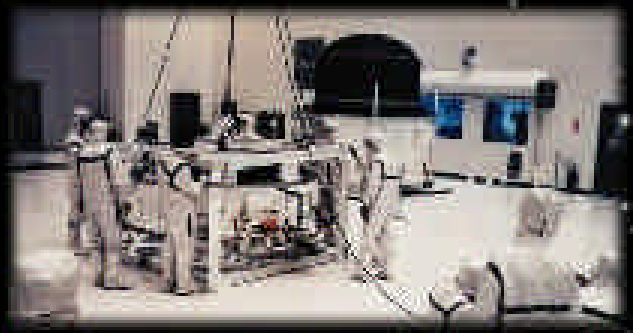
Public

Astronauts and Pilots

Mission Success Starts With Safety

NASA

http://www.hq.nasa.gov/safety



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High-Value Equipment and Property